**From:** "Rooks, Heidi" <hrooks@water.ca.gov>
**To:** "Patrick Morris" <pmorris@waterboards.ca.gov>
**Date:** 2/14/2007 1:25:19 PM
**Subject:** MeHg TMDL

Patrick,

A couple of more thoughts before you go to press:

* The Reclamation Board instead of DWR has the legal obligation in the Cache Creek Settling Basin and in the Yolo Bypass. DWR is responsible for the maintenance, removing sediment and/or cutting grass and trees, as the case may be, and only has easements on these lands to do the maintenance. DWR doesn't own the land or the levees and in the case of Cache Creek, especially, does not have anything to do with flows. It may be that DWR removes the sediment, but is not the agency responsible for the discharge of total mercury or methylmercury from the Settling Basin. Also, why are the upstream Cache Creek landowners and agencies not responsible for the discharge of total mercury or methylmercury from the Settling Basin through the Cache Creek TMDL?
* DWR would be in favor of an offset program in the Settling Basin if the agreements were only between the RWQCB, the dischargers and the landowners and didn't involve DWR for reasons explained above.
* In the Yolo Bypass, the flood flow, duration and frequency are dependent on runoff. The Army Corps of Engineers is responsible for establishing flood control operational criteria for the reservoirs upstream of the delta and in the Yolo Bypass. DWR cannot change the criteria, only respond to flow events by operating within the criteria set by the Corps. In the future, climate change will have more to do with changes in the flow, duration and timing of flood flows/conveyance in the bypass and the Delta than DWR (and USBR) operations.
* CVP-OCAP - The SWRCB sets the Delta water quality (salinity) and quantity objectives (flow) that the USBR and DWR are required to operate to (Water Quality Control Plan and D-1641). The Army Corps of Engineers sets the flow limits into the export pumps. The USBR and DWR facilities are managed to meet those objectives in conjunction with operations of other newer facilities in the delta, such as the EBMUD diversion at Freeport, the City of Sac diversion at Sac, etc. and are described in the CVP-OCAP. On top of these constraints, the USFWS and NOAA Fisheries, through the ESA, set additional limits on the operations. Hydrologic and hydraulic modeling are the tools used to evaluate alternative scenarios of operations, are calculated on mean monthly values and are highly variable but achieve the required objectives. The most appropriate time to evaluate changes in water management and the resulting effects on mercury methylation in the delta would be when the SWRCB conducts the periodic review of the Water Quality Control Plan for the Bay-Delta At that time, the DWR and USBR could evaluate the potential effects on of those changes on methyl mercury.

Thank you for the opportunity to comment.

Heidi

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## Dredging

The following requirements apply to dredge projects where a Clean Water Act 401 Water Quality Certification is required. The Clean Water Act 401 Water Quality Certifications shall include the following conditions:

1. There shall be no net increase in methyl and total mercury loads to Delta waterways from dredging activities or from reuse of dredge material in the Delta.
2. Conduct pre-dredge sediment coring to determine total mercury concentrations of surface sediment and buried sediment at the proposed dredge depth as required by the Executive Officer. During Phase 1, if the newly exposed sediment has an average total mercury concentration greater than the surface material before dredging, the project proponent shall submit a workplan for Executive Officer approval that demonstrates that the project will be accomplished in a manner that minimizes the increase in the amount of bioavailable mercury in the newly exposed sediment.
3. Employ management practices during and after dredging activities as required by Regional Board staff to minimize sediment releases into the water column.
4. Characterize total mercury loads removed from Delta waterways by dredging activities.
5. When approved dredge material disposal sites are utilized to settle out solids and return waters are discharged into the adjacent surface water, ensure that return flows do not have methylmercury concentrations greater than the receiving water concentration.
6. Ensure that dredged material reused at upland sites, including the tops and backs of levees, is protected from erosion.
7. Ensure that reuse of dredge material at aquatic locations, such as wetland and riparian habitat restoration sites, does not result in a net increase in methylmercury discharges from the sites. Projects that propose to dispose dredge material to aquatic sites will be required to conduct monitoring to demonstrate that their activities are accomplished in a manner that does not increase the bioavailability of mercury.

The above revised language seems reasonable, but what will be required in later phases? Does the Board intend to prevent dredging of material that will result in exposing a layer of sediment that has a higher Hg concentration? If watershed actions reduce the influx of mercury it is likely that the more recent sediment deposits will have a lower concentration than deeper sediments. DWR and others will have a continued need to dredge and we need to be assured the later phases of the basin plan do not prevent the exposure of older sediments but rather require management practices to minimize the impacts to mercury loading from dredging.

## Flood Conveyance Flows and Water Management and Storage

Methylmercury flux from sediment in open waters of the Delta needs to be reduced. At a minimum, methylmercury flux should not increase above the levels defined in Table G. Changes in flood conveyance, water management activities, and seasonal wetland flooding may influence ambient methylmercury levels in the Delta. Additionally, changes in the salinity concentrations of Delta waters (with the resulting changes in sulfate concentrations) may also influence the ambient methylmercury levels in the Delta.

Proponents for new projects that have the potential to increase ambient methylmercury levels in the Delta shall conduct **Characterization and Control Studies** to determine baseline conditions, evaluate potential negative impacts of project alternatives on ambient

methylmercury levels, and develop mitigation measures for alternatives that would increase ambient methylmercury levels.

**Flood conveyance/ seasonal wetland flooding.** Agencies responsible for flood conveyance activities in the Yolo Bypass include Department of Water Resources (DWR) and U.S. Bureau of Reclamation (USBR).

The Regional Board requires responsible agencies that propose new flood conveyance projects or changes to existing flood conveyance projects complete **Characterization and Control Studies** prior to project completion. Changes in flood conveyance include new or modified weirs in the Yolo Bypass and changes in the *Central Valley Project – Operations Criteria and Plan, 30 June 2004* (CVP-OCAP) that result in increased flows, flood frequency, or flood duration in the Yolo Bypass. If a characterization study indicates a project would increase ambient methylmercury levels, then the project proponents shall develop and implement control actions to mitigate the methylmercury increase. The responsible parties may coordinate with wetland and agricultural landowners to characterize existing methylmercury discharges to open waters from lands immersed by managed flood flows and to develop methylmercury control measures.

**Water management.** Existing water management activities in the Delta include upstream reservoir storage and releases, water routing, and state and federal water diversion projects. Agencies responsible for water management activities in the Delta include DWR and USBR.

Proponents of new or expanded reservoirs, changes to the CVP-OCAP that result in alterations, that are outside of the scope of the currently permitted operations, to water storage or release schedules, or new within-Delta diversion projects (including the South Delta Improvement Project and "Delta Wetlands Project"), shall evaluate the potential of the projects to increase methylmercury levels in the Delta prior to project completion. If the evaluation indicates a project would increase ambient methylmercury levels, then the project proponents shall develop methylmercury control actions, evaluate the affects of potential control actions on other water quality or flow mandates (e.g., minimum flow and temperature mandates) for such projects, and implement those methylmercury control actions that do not conflict with the other water quality or flow mandates.

**Salinity Objectives.** The Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin River Estuary (Bay-Delta Plan) includes Water Quality Objectives for salinity (typically measured as electrical conductivity) at specific locations in the Delta. An example of this is the Delta Outflow objective, which requires the maintenance of the two parts per thousand salinity level (X2) at various locations within the Delta, depending on the season and water year type. Changes to the water quality objectives for salinity (such as the Delta Outflow objective) or flow management practices used to maintain current salinity objectives could affect sulfate concentrations in sediment and methylmercury production rates.

Proponents of water management actions that could result in direct or indirect changes to sulfate concentrations in the Delta due to changes to the salinity objectives shall conduct studies to characterize baseline methylmercury production in open channels during different seasons and flow regimes prior to project completion. In addition, project proponents shall:

1. Evaluate direct and indirect effects of proposed flow management practices on sulfate concentrations and methylmercury production in the Delta; and

2. Conduct sulfate amendment studies to determine whether sulfate concentrations affect methylmercury production rates and resulting ambient water column concentrations in the Delta.

If changes in the salinity objectives (or changes in flow management practices used to maintain current salinity objectives) would increase ambient methylmercury levels, then the project proponents shall 1) develop methylmercury control actions, 2) evaluate potential conflicts between methylmercury control actions and mandates for achieving salinity objectives, 3) document the inability to implement feasible methylmercury control actions if there is a conflict with meeting salinity objectives, and 4) implement those methylmercury control actions that do not conflict with the mandates.

Developing the baseline and management measures for methylmercury in the Delta is a major task that should not be the responsibility of the individual project proponents alone. The science needs to be developed and doing so will benefit project proponents and make the project specific analysis less onerous. This needs to be coordinated with the mercury workgroup and bond funding will likely be available to assist in the funding. Further discussion on the larger Delta mercury discussions is needed and it will be brought up at the March workshop.